



2008 Minerals Yearbook

PERU

THE MINERAL INDUSTRY OF PERU

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In 2008, Peru occupied a leading position in the global production of the following mineral commodities, in alphabetical order: arsenic trioxide (fourth after China, Chile, and Morocco), bismuth (third after China and Mexico), copper (third after Chile and the United States), gold (fifth after China, South Africa, the United States, and Australia), lead (fourth after China, Australia, and the United States), molybdenum (fourth after the United States, China, and Chile), rhenium (fourth after Chile, Kazakhstan, and the United States), silver (first followed by Mexico and China), tin (third after China and Indonesia), and zinc (third after China and Australia). In Latin America, Peru was first in the production of gold, lead, silver, tellurium, tin, and zinc, and second in the production of bismuth (after Mexico) and copper and molybdenum (after Chile) (Brooks, 2009a, b; Carlin, 2009a, b; Edelstein, 2009; George, 2009; Guberman, 2009; Magyar, 2009a, b; ProInversión—Private Investment Promotion Agency in Peru, 2009; Tolcin, 2009).

In 2008, Peru's gross domestic product (GDP) grew at a real rate of 9.8%, which was a sustained growth rate since 2002. Peru's net international reserves increased to \$31.2 billion compared with \$27.7 billion in 2007, exports exceeded imports by \$3 billion, and foreign direct investment (FDI) amounted to \$4.1 billion. Private investment in Peru continued to be significant, increasing to \$27.3 billion in 2008 from \$19.5 billion in 2007 and \$15.1 billion in 2006 (Banco Central de Reserva del Perú, 2009, p. 17; Economic Commission for Latin America and the Caribbean, 2009; International Monetary Fund, 2009a, p. 87; 2009b, p. 1-8; Ministerio de Energía y Minas, 2009a, p. 5, 11; 2009b, p. 2, 5; ProInversión—Private Investment Promotion Agency in Peru, 2009).

In 2008, several foreign mining companies invested in the Peruvian mining sector. Aluminum Corp. of China (Chinalco) invested \$2.2 billion in the Toromocho copper project, which was to start operations by 2012; Xstrata plc of Switzerland invested \$1.5 billion in Las Bambas copper mine, which was to start operations by 2014; Rio Blanco Copper S.A. and Zijin Mining Group of China committed to invest \$1.44 billion in the Rio Blanco base-metals project, which was to start operations by 2012; Rio Tinto Ltd. of Australia (BHP Billiton plc., 100%) committed to invest \$1 billion in La Granja copper project, which was to start operations by 2014; Sociedad Minera Cerro Verde S.A. (a consortia formed by the U.S. company Freeport-McMoRan Copper Inc.) invested \$1 billion for expansion of the Cerro Verde copper mine by 2012; Southern Copper Corp. (a subsidiary of Grupo Mexico, S.A. de C.V.) committed to invest \$600 million in the expansion of the Ilo smelter by 2012; and Cia. Minera Miski Mayo S.A. and Vale S.A. (Vale) of Brazil committed to invest \$490 million in the Bayovar phosphate project, which was to start operations by 2010. The total committed investment in the mining sector for the period 2009-16 was \$24.7 billion (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009a, p. 85; 2009b).

Petróleos del Perú S.A. (PETROPERU), which was a state-owned company, was involved in the transportation, refining, and marketing of refined products and other derivatives of petroleum. Since June 2, 2004, the Peruvian Congress enacted law No. 28244 to exclude PETROPERU from the privatization process but authorized its participation in the exploration for and production of hydrocarbons. The state agency Perúpetro S.A. was created on November 18, 1993, (law No. 26221) to be responsible for promoting investments in the Peruvian hydrocarbon sector. Perúpetro negotiates, signs, and administers hydrocarbon contracts, for which PETROPERU must compete with the private sector. Private investment in Peru continued to increase owing to the country's macroeconomic stability and the involvement of operating companies with the communities where they operate. The Peruvian Government had revised the country's legal framework by enacting legislation for the mining and hydrocarbon sectors, which made them more investor-friendly, and Peru's national economy continued to attract foreign investment (Ministerio de Energía y Minas, 2009c, d).

In 2008, Perúpetro attracted investment of more than \$3.4 billion to the hydrocarbon sector. The Camisea Natural Gas Project received an investment of \$1.3 billion. PERU LNG, which was Camisea's liquefied natural gas (LNG) project, was a partnership of Hunt Oil Co. of Dallas, Texas (50%), Repsol YPF S.A. of Spain and SK Energy Co. Ltd. of the Republic of Korea (20% each), and Marubeni Corp. of Japan (10%). Construction of the PERU LNG plant, which would have the capacity to produce 4.4 million metric tons per year (Mt/yr) of LNG, continued on schedule, with initial delivery of LNG projected for mid-2010; the total project cost was estimated to be about \$3.8 billion, which included financing costs (Camisea Project, 2008, p. 13-15; 2009; Ministerio de Energía y Minas, 2009e; ProInversión—Private Investment Promotion Agency in Peru, 2009).

Minerals in the National Economy

Peru was the leading producer of gold, lead, silver, tellurium, tin, and zinc in Latin America and the second ranked producer of bismuth, copper, and molybdenum. The mining and mineral processing industries represented almost 7.3% of the GDP in 2008. The minerals sector employed almost 5% (120,000) of the industrial sector total of 2.4 million; this did not include the nearly 80,000 active informal miners (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 10; U.S. Central Intelligence Agency, 2009).

Government Policies and Programs

Peru's legal framework regarding domestic and foreign investors is governed by such constitutional mandates as Legislative Decree No. 662 (promotion of foreign investment), which allows investors unrestricted access to all economic sectors; Legislative Decree No. 757 (framework for the

development of private investment), which pertains to private investment growth; and Legislative Decree law No. 868 of May 1996 (Texto Unico Oficial) as approved by Supreme Decree No. 059-96-PCM, which promotes private investment in public infrastructure and utility works. Within the framework of Decree law No. 708 of November 1991 (promotion of investment in mining), Legislative Decree law No. 818 of April 1996 (incentives for investing in natural resources), and Supreme Decree law No. 162-92-EF of October 1992 (rules guaranteeing foreign investment), more than 250 domestic stability and guarantee contracts had been signed since 1993 (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009c, d).

Supreme Decree law No. 014-92-EM of June 1992 (the general mining law) and the Texto Unico Oficial provide guaranteed protections to mining ventures and contracts under the Peruvian Civil Code. Consequently, such ventures and contracts are immune from unilateral changes by any governmental authority in Peru without an appropriate legal or administrative remedy or arbitration by the Convenio Constitutivo del Centro Internacional de Arreglo de Diferencias Relativas a Inversiones (Formal Consent of the International Center for Settlement of Relative Differences on Investments).

Peru enacted Supreme Decree law No. 047-2002-EF of April 2002 (import duties for capital goods) to reduce the duties paid to 7% from 20% and 12% on capital goods to be used in exploration and production of certain minerals, such as oil and gas in the Amazon region. Law No. 27623-EF was enacted in January 2002 to eliminate the 18% sales tax on capital, goods, and services for minerals exploration. Supreme Decree law No. 015-2004-PGM of January 2004 (legal framework for decentralization) was established to use revenues from mineral production to maximize the well-being of the local communities through economic growth, environmental protection, and social development in a sustainable way. Supreme Decree law No. 066-2005-EM of May 2006 (legal framework for creation of the Dirección de Gestión Social) was established to administer the Corporate Social Responsibility program in the mining sector (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 13; 2009c).

The Peruvian Constitution establishes equal protection for domestic and foreign investors who enter into agreements with the Government and guarantees free access to possession and disposal of foreign currency. Hydrocarbon law No. 26844 of May 1997 eliminated the exclusive rights of state-owned PETROPERU to control the secondary recovery of crude oil, refining, and imports and subsequent resale of petroleum and byproducts. The Peruvian laws have attempted to ensure more-favorable minerals and crude oil and gas exploration and production contract terms for investors (Ministerio de Energía y Minas, 2009c, d; ProInversión—Private Investment Promotion Agency in Peru, 2009).

Legal procedures to obtain mining rights were made easier by the enactment of complementary legislation Supreme Decree law No. 018 of July 9, 1992. The Government relinquished its exclusive management of exploration, mining, smelting, and refining of metals and fuel minerals. Individuals and private companies are allowed to hold mining permits in

Peru. In the legal framework for investment and taxation, no distinction is made among domestic and foreign investors, and consortia, corporations, and joint ventures formed in Peru or abroad. Municipalities and Regional governments in areas where mineral resources (metals and industrial minerals) are exploited will receive 50% of the taxes collected to be invested in education and social programs (health, housing, and others) in conformance with the Canon Minero (Ministry Resolution No. 266-2002-EF/15 of May 1, 2002). The remittance of depreciation, dividends, and royalties abroad has no restrictions. Contracts can be signed by investors, and the Government guarantees the stability of legal commitments and taxes. To increase protection of investors' interests, Peru signed agreements with the World Bank's Multilateral Investment Guarantee Agency in April 1991, which was authorized by Legislative Decree law No. 25312, and with the Overseas Private Investment Corporation in December 2002, which was authorized by Legislative Decree law No. 25809 (Ministerio de Energía y Minas, 2009c, d; ProInversión—Private Investment Promotion Agency in Peru, 2009).

The Dirección General de Asuntos Ambientales (DGAA) of the Ministerio de Energía y Minas (MEM) has the responsibility to address environmental problems that result from energy and mining activities and is mandated to implement the laws and regulations of the environmental legal framework, such as Legislative Decree No. 613 of September 1990 (the environmental code) and Supreme Decree No. 016-93-EM of April 28, 1993 (the environmental regulation). The sustainable development model for the mining and energy sectors began in 1993 with regulations and procedures for the gradual reduction of pollution, which include economic development policies and environmental protection. The mining industry must comply by adjusting its ongoing operations to permissible effluent levels and its new operations by using cleaner technologies. The DGAA evaluates and proposes the environmental regulations for the mining and energy sectors, which include the maximum emission levels that are compatible with the internationally accepted limits set by the United Nations and the World Bank, approves environmental impact assessments for new operations and environmental adjustment and management programs for ongoing ones, and administers the national environmental information system. The MEM is authorized to manage environmental affairs in the minerals sector, such as by establishing the environmental protection policy and maximum allowable levels for effluents, signing environmental administrative stability agreements, overseeing the effect of operations, determining responsibilities, and imposing administrative sanctions. The oil companies, in particular, were under pressure because the number of operations in the Amazon Rain Forest—one of the world's most sensitive ecosystems—was increasing (Ministerio de Energía y Minas, 2009c, d; ProInversión—Private Investment Promotion Agency in Peru, 2009).

Production

In 2008, the mining (metals and industrial minerals) and hydrocarbon sectors represented more than 7.3% and 10.3% of

Peru's GDP, respectively. Mining of industrial minerals showed a faster pace of growth than it did in 2007. The effect of the global financial crisis generated increases and decreases in the international prices of Peru's leading mineral commodities, including increases in the prices of gold, iron, silver, and tin and decreases in the prices of copper, lead, and zinc. The global financial crisis caused companies in the Peruvian base-metals sector to initiate cost-reducing programs to offset their lower prices. In 2008, the increase in mineral production was led mainly by tin (64.3%), natural gas (51%), lead (26%), zinc (14.1%), copper (10.9%), and gold (7.7%). The hydrocarbon sector's output also increased owing to the increased extraction of natural gas at Aguaytia and Camisea. Crude oil output was expected to increase as a result of the 25 new oil exploration and long-term production contracts signed in 2007 (table 1; Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009a, p. 70).

Structure of the Mineral Industry

The structure of the Peruvian mineral industry continued to change owing to privatizations and joint-venture projects. The establishment of consortia in such deregulated industries as oil and gas, and joint ventures in energy and mining projects were becoming a common practice in Peru. Peruvian laws ensure equitable treatment of domestic and foreign investors involved in mineral, crude oil, and gas exploration and production. Because of these laws, an increased number of domestic and foreign companies had expressed interest in participating in prospecting, exploration, production, and distribution of natural gas and petroleum contracts with Perupetro and mineral properties with Centromin Perú S.A. These companies included Anglo American plc and BHP Billiton plc. of the United Kingdom; Cambior, Inc. and Teck Cominco Ltd. of Canada; Hunt Oil Co. of the United States; Marubeni Corp., Mitsui & Co., Ltd., and Mitsubishi Corp. of Japan; Peñoles S.A. of Mexico; SK Energy Co. Ltd. of the Republic of Korea; Repsol YPF S.A. of Spain; Vale S.A. and Votantim Metais of Brazil; Xstrata plc of Switzerland; and others (Ministerio de Energía y Minas, 2009b, p. 80-82; ProInversión—Private Investment Promotion Agency in Peru, 2009).

The new operating process incorporated policies for dealing with economic and societal development issues and with environmental protection in a sustainable way. Private domestic interests owned most of the medium- and small-sized mining operations. More than 300 foreign mining companies had been established in Peru since 1990. Crude oil was transported through the country's 1,754 kilometers (km) of pipeline; natural gas and natural gas liquids, through 983 km of dual pipeline; and refined products, through 13 km of pipeline. Important mineral industry ports included Callao, Chimbote, Ilo, Matarani, Paita, Puerto Maldonado, Salaverry, San Martín, San Nicolás, and Talara on the Pacific Ocean, and Iquitos Pucallpa and Yurimaguas on the Amazon River and its tributaries. Peru had an installed electricity generating capacity of 5,050 megawatts (MW), about 90% of which was in hydroelectric plants.

The Peruvian Government raised about \$2 billion from the privatization of its electrical sector and committed to

an investment of about \$20 million to install an additional 1,006 MW of capacity in the immediate future. The energy mix, by source, was hydroelectric (79%), fossil fuel (20%), and others (1%) (Ministerio de Energía y Minas, 2009a, p. 110; 2009e; U.S. Central Intelligence Agency, 2009).

Mineral Trade

Peru's mining sector accounted for about 59.6% (\$18.7 billion) of total export revenues of about \$31.4 billion in 2008 compared with almost 62% (\$17.3 billion) of total export revenues of about \$28 billion in 2007. In 2008, Peru's total trade balance recorded a surplus of almost \$3 billion compared with \$8.4 billion in 2007, which indicates that the country imported goods valued at \$28.5 billion in 2008 compared with \$19.6 billion in 2007. Peru's minerals sector had a trade surplus of \$18.5 billion in 2008 compared with \$19.1 billion in 2007 (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 2-3).

In 2008, the main destination markets of Peruvian exports as a percent of total exports were the United States (20%), China (15.2%), Canada (8.3%), Japan (7%), Chile (5.8%), and Brazil (4.2%). The United States, China, Brazil, Japan, and Chile, in order of value, were the main importers of gold, copper, and molybdenum. Peru sold about 5% of its exports to other members of the Mercado Común Andino (ANCOM), whose members were Bolivia, Colombia, Ecuador, Peru, and Venezuela; about 4%, to the Mercado Común del Cono Sur (MERCOSUR) countries of Argentina, Brazil, Paraguay, and Uruguay and associate members Bolivia and Chile; and 12%, to other Latin American countries. Peruvian mineral exports could increase if the negotiations between ANCOM and MERCOSUR lead to a South American free trade agreement, and in response to the United States-Peru Trade Promotion Agreement already signed in 2007 (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 6-7; U.S. Central Intelligence Agency, 2009).

Commodity Review

Metals

Copper.—Peru's copper output (Cu content) in 2008 was about 1.3 million metric tons (Mt) compared with almost 1.2 Mt in 2007, which was an increase of more than 8%. The country's copper metal exports in 2008 totaled more than 1.24 Mt valued at about \$7.7 billion compared with 1.12 Mt valued at more than \$7.2 billion in 2007; this value was almost 11% higher than that of 2007 (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 26-32; ProInversión—Private Investment Promotion Agency in Peru, 2009).

Owing to China's increased demand for copper, the Chinese firm Chinalco was planning to develop Toromocho's contained 1.4 billion metric tons (Gt) of proven and probable reserves at a grade of 0.71% of copper equivalent, to produce 275,000 metric tons per year (t/yr) of copper metal by 2012; the Chinese company Consorcio Xiamen Zijin Tongguan Investment Development Co. Ltd. (Zijin Mining Group) was

also planning to develop the Rio Blanco copper project, which is located in the Department of Piura (a \$1.44 billion investment to produce 25 Mt of copper ore from a deposit of 1.3 Gt at a grade of 0.57% copper equivalent by 2012) (Ministerio de Energía y Minas, 2009b, p. 27).

In 2008, Peru's planned investments of more than \$24.7 billion were expected to include mineral projects with advanced exploration, feasibility studies, and expansion work, such as Las Bambas (\$1.5 billion) and Los Chancas (\$1.2 billion) copper deposits, which are located in the Department of Apurímac and were owned by Xstrata and Southern Copper, respectively (Banco Central del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 27).

Other investments in copper deposits included the partnership of China Minmetals Corp. and Jiangxi Copper Co., Ltd., which had acquired 93.9% of Northern Perú S.A.'s Galeno, Hilorico, and Pashpap copper projects in Celendin, Department of Cajamarca. The estimated investment in the Galeno copper project (which has reserves of 803 Mt at a grade of 0.63% equivalent copper) was \$2.5 billion to produce copper metal by 2014. Southern Copper was planning to invest \$600 million in additional exploration and to improve efficiencies at the Cuajone and the Toquepala copper mines by 2012, and to invest \$950 million in its Tia María copper project, which is located in the Department of Arequipa, to produce 120,000 t/yr of copper metal by 2012. Other mineral prospects included the San Gregorio copper-lead-zinc project of Sociedad Minera El Brocal S.A.A., which is located in the Department of Cerro de Pasco; the Minas Carachugo gold-and-silver project of Minera Yanacocha S.R.L. (MYS) [Newmont Mining Corp. of the United States (51.35%), Compañía de Minas Buenaventura S.A.A. (43.65%), and the World Bank Group's International Finance Corporation (5%)], which is located in the Department of Cajamarca; and the Magistral copper-molybdenum-silver project of Inca Pacific Resources, which is located in the Department of Ancash. Magistral is located in the same geologic trend as that of Compañía Minera Antamina S.A.'s (CMA) Antamina base-metal mine (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 27-28).

Gold.—In 2008, gold output was almost 180 metric tons (t) compared with 170 t in 2007, which was an increase of almost 5.8%. Peru's gold exports in 2008 totaled about 200 t (6.42 million troy ounces) valued at about \$5.6 billion compared with 184 t (5.93 million troy ounces) valued at about \$4.2 billion in 2007; this value was more than 33% higher than that of 2007. In 2008, Peru's planned investments of more than \$24.7 billion were expected to include mineral projects with advanced exploration and environmental assessment work for gold, such as Minera Yanacocha's Pita cyanuration plant at Yanacocha Mine (\$270 million), its project at Chaquicocha (\$400 million), and its Minas Conga project (\$1.0 billion) in the Department of Cajamarca, which was expected to be completed by 2014; and Buenaventura's La Zanja gold deposit located in the Department of Cajamarca (\$60 million), which was expected to be completed by 2010 (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 35-36; ProInversión—Private Investment Promotion Agency in Peru, 2009).

Gold recovered as a byproduct from the concentrates of Peru's polymetallic mines amounted to 8 t. From the total gold output in 2008, large-, medium-, and small-scale producers reported producing 155 t and an unknown number of gold placers and informal individual miners reported producing 17 t of gold. Placers accounted for more than 9% of the gold produced in the country. The southeastern Andes have well-known gold placers on the Inambari River and its tributaries. Placer gold was produced mostly in the Inca and the Mariategui Regions and from rivers and streams throughout the jungle (Ministerio de Energía y Minas, 2009b, p. 35-36).

Iron Ore.—Shougang Hierro Perú S.A.A. (a subsidiary of China's Shougang Corp.) continued to be Peru's sole iron ore producer; production was exclusively from the Marcona iron ore mine in the Department of Ica. Mine output increased slightly to 5.244 Mt of iron content in 2008 from 5.186 Mt in 2007. Iron ore exports amounted to 6.8 Mt valued at \$385.1 million compared with 7.2 Mt valued at \$285.8 million in 2007, which was an increase of almost 35%. This increase was in response to higher prices (\$57.5 per metric ton in 2008 and \$39.84 per metric ton in 2007) and increased demand in China and other economies in the Asia and the Pacific region for construction and higher steel output, which had a positive effect on higher molybdenum production as well. According to the Ministerio de Energía y Minas, Cuervo Resources Inc. of Canada was exploring the Cerro Ccopane and the Huillque iron ore deposits, which are located in the Department of Cusco (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 69; ProInversión—Private Investment Promotion Agency in Peru, 2009).

Lead, Silver, and Zinc.—The Peruvian zinc industry produced more than 1.6 Mt of zinc in concentrates in 2008 compared with about 1.4 Mt in 2007. The country's total silver content output increased to 3,686 t compared with 3,501 t in 2007. Peru surpassed Mexico's silver output of 3,000 t in 2008. Companies that produced silver, such as Aruntani, El Brocal, Compañía de Minas Buenaventura S.A.A., and Volcan Compañía Minera S.A.A., were more active in 2008, and silver production was higher than in 2007 because Minera Yanacocha S.R.L. and medium-sized gold-silver mines exceeded their initial production goals. Yanacocha increased its output mainly as a result of technological innovations in its gold-silver recovery process. Higher international prices of \$15 per troy ounce in 2008 compared with \$13 per troy ounce in 2007 allowed medium-sized mines and small-scale producers to mine lower grade ores. Peru produced 345,109 t of lead in concentrates compared with about 329,165 t in 2007. Exports of lead amounted to more than \$1.1 billion in 2008 compared with about \$1 billion in 2007; prices decreased to \$1.002 per pound in 2008 from \$1.147 per pound in 2007. Exports of silver amounted to more than \$595 million in 2008 compared with about \$537 million in 2007; prices increased to \$14.95 per troy ounce in 2008 from \$13.35 per troy ounce in 2007. Exports of zinc amounted to almost \$1.5 billion in 2008 compared with more than \$2.5 billion in 2007; prices decreased to \$0.472 per pound in 2008 from \$0.911 per pound in 2007 (Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009b, p. 41-42, 58-59, 62-63; ProInversión—Private Investment Promotion Agency in Peru, 2009).

Tin.—Production from Minsur’s San Rafael Mine, which is located in the Mariategui Region, was 39,037 t in concentrate in 2008 compared with 39,019 t in 2007. Minsur’s tin smelting and refining operations, which are located in Pisco, south of Lima, produced 38,865 t of metal compared with 36,004 t in 2007. Peru continued to be the leading tin producer in Latin America followed by Bolivia and Brazil. Minsur, which was the only fully integrated tin supplier in Peru, produced more than 11% of the world’s output and exported 39,760 t valued at \$695 million in 2008 compared with 29,380 t valued at \$423 million in 2007 (Banco Central de Reserva del Perú, 2009; Carlin, 2009b; Ministerio de Energía y Minas, 2009b, 66, 69; ProInversión—Private Investment Promotion Agency in Peru, 2009).

Industrial Minerals

Phosphate Rock.—Empresa Minera Regional Grau Bayóvar S.A.’s phosphate deposits (Bayovar project) produced 38,000 t of phosphate rock, which was about the same level as that of 2007. The 90,000-t/yr phosphate plant that was operated by Grau Bayóvar produced 17,100 t of phosphate (P_2O_5) in 2008. The Bayovar project comprises 150,000 hectares of phosphate and brine and has proven reserves of 800 Mt of phosphatic rock equivalent to 262 Mt of phosphate rock with a P_2O_5 content of 30%. Grau Bayóvar was planning to invest \$490 million to conduct exploration of this world-class deposit and a feasibility study to produce 3.3 Mt/yr of rock phosphate by 2010 (Ministerio de Energía y Minas, 2009b, p. 25, 31).

Mineral Fuels

Coal.—Peru’s largest coal deposits are located at Alto Chicama in La Libertad Department. Other known coal deposits occur in the Cuenca del Santa in the Marañon Region and the coal basins of Goyllarisquiza and Hatun Huasi in the Caceres Region of central Peru. In 2008, Peru’s recoverable coal reserves were estimated to be 1.1 Gt (table 3), and coal production was 136,435 t compared with an estimated consumption of more than 1.3 Mt/yr and imports of about 1.2 Mt/yr, mostly from Colombia (table 1; Ministerio de Energía y Minas, 2009a, p. 110; U.S. Energy Information Administration, 2009).

Natural Gas and Petroleum.—In 2008, Peru’s recoverable (proven and probable) and possible resources of crude oil, liquefied natural gas (LNG), and natural gas resources were estimated to be 4,910 million barrels (Mbbbl); LNG, 1,350 Mbbbl; and natural gas, 846 billion cubic meters, respectively. The leading gasfields were the Aguaytia, which is located about 41 km west-northwest of Pucallpa, Ucayali Department, and had proven reserves of 8.5 billion cubic meters of gas and 9 Mbbbl of natural gas liquids (NGL), and the Camisea gasfields in the Ucayali Basin, Cusco Department, which had proven reserves of 250 billion cubic meters of gas and 411 Mbbbl of NGL. Natural gas production increased to 3,176 million cubic meters in 2008 from 2,676 million cubic meters in 2007 and was produced by Pluspetrol S.A. (73%), Aguaytia S.A. (15%), Petrotech del Perú S.A. (5%), Petróleo Brasileiro S.A. (Petrobrás) (4%), and others (3%). Petrobrás through Petrobrás Energía S.A. acquired exploration and production rights for natural gas and petroleum

in Lots 57 and X, respectively (Camisea Project, 2008; Petróleo Brasileiro S.A., 2008; Ministerio de Energía y Minas, 2009d; U.S. Energy Information Administration, 2009).

The Camisea Project encompasses three segments—Upstream, Transportation, and Distribution of natural gas from the Camisea field—and is located in the Ucayali Basin in the Department of Cusco. The reduction of consumers’ bills and the costs savings realized by the use of natural gas are some important benefits of this project, and thus far Peru had received an investment of \$1.6 billion to implement the above segments in 2008. Pluspetrol was planning to invest about \$3.02 billion in Camisea’s natural gas project by 2013 (Camisea Project, 2008; PETROPERU S.A., 2009).

In 2008, crude oil production decreased to 76,800 barrels per day (bbl/d) from 77,100 bbl/d in 2007. Production of petroleum derivatives increased to 173,200 bbl/d from 172,600 bbl/d in 2007. Peru imported an average of 52,000 bbl/d of crude oil and petroleum products to satisfy its internal consumption of 172,000 bbl/d. Peru’s total crude oil production of 28 Mbbbl in 2008 came from Pluspetrol (52.6%), Petrobrás (19.6%), Petrotech (15.3%), and others (12.5%) (table 1; Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009d; U.S. Energy Information Administration, 2009).

In 2008, the largest oil refinery continued to be PETROPERU’s La Pampilla, which had a designed capacity of about 110,000 bbl/d. The second largest oil refinery was PETROPERU’s Talara, which had a designed capacity of about 62,000 bbl/d. Other refineries had the following designed capacities: Conchan, 15,500 bbl/d; Iquitos, 10,500 bbl/d; Pucallpa, 3,300 bbl/d; and El Milagro, 1,700 bbl/d. Refinery production came from La Pampilla (50%), Talara (36%), Conchan (7%), Iquitos (5%), and Milagro and Pucallpa (1% each) (Ministerio de Energía y Minas, 2009d).

Reserves and Resources

Table 3 lists the Peruvian reserves of major minerals, such as copper, gold, iron ore, lead, molybdenum, silver, and zinc, as of about January 1, 2009. Data are shown in terms of metal contained in ore for the base and precious metals or recoverable quantities of other mineral commodities, which included industrial minerals and mineral fuels. These mineral reserves represent “proven” (measured) and “probable” (indicated) categories and exclude quantities reported as “possible” (inferred). Reserves are defined as being well delineated and economically recoverable volumes of crude oil and natural gas from wells and minable ore from mines committed to production (U.S. Bureau of Mines and U.S. Geological Survey, 1980; Ministerio de Energía y Minas, 2009a, p. 49, 69; 2009d).

Outlook

According to ProInversión, Peru’s economy is committed to the trade integration process, through 32 investment agreements and preferential access to Canada, the European Union, MERCOSUR, and the United States. Because Peru’s legal framework is favorable for foreign investment, the energy, mining, and related industries are expected to continue to

attract capital flows by way of joint ventures and consortia, privatizations, and direct acquisitions. The privatization process in the minerals sector and investment in every sector of the Peruvian economy, particularly in the mineral and energy industries, are expected to generate additional investments. Peru is likely to continue to be the world's leading producer of silver and Latin America's leading producer of, in order of value, gold, zinc, tin, and lead and the second ranked producer of copper and molybdenum. The country has high potential for nonmetallic production as well, such as that of bentonite, borates, diatomite, phosphate rock, and travertine, among others. Increased demand for copper, gold, iron ore, natural gas, and silver is likely to encourage investors to expand and modernize their operations. The liquefaction of Camisea's natural gas for export to China, MERCOSUR, North America Free Trade Agreement, and other markets and trading partners is expected to increase Peru's mineral exports further (Camisea Project, 2008, 2009; Banco Central de Reserva del Perú, 2009; Ministerio de Energía y Minas, 2009a, p. 10-11, d, e; ProInversión—Private Investment Promotion Agency in Peru, 2009).

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TABLE 1
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2004	2005	2006	2007	2008 ^p
METALS					
Antimony:					
Mine output, Sb content ^c	460	1,000	1,000	1,000	1,000
Metal	465 ^r	807	691 ^r	590 ^r	531
Arsenic, white ²	3,037 ^r	3,150 ^r	4,399 ^r	4,321 ^r	4,822
Bismuth:^c					
Mine output, Bi content	988 ^r	952	1,081 ^r	1,114 ^r	1,061
Metal	600	600	600	600	600
Cadmium, metal	532	481	416	347 ^r	371
Copper:					
Mine output, Cu content	1,035,574	1,009,898	1,048,472 ^r	1,190,274 ^r	1,267,867 ³
Sulfate, Cu content	2,000	2,000	2,000	2,000	2,000
Metal:					
Blister	320,135	320,625	322,188	236,809	306,584
Refined, primary:					
Electrowon	167,000	165,530	173,871 ^r	172,118	160,078
Other	338,308	346,206	333,839	241,789	303,855
Total	505,308	511,736	507,710 ^r	413,907	463,933
Gold:⁴					
Mines kilograms	158,438	191,910	187,026 ^r	153,863 ^r	163,162
Placers do.	14,786	16,092	15,800	16,373	16,708
Total do.	173,224	208,002	202,826 ^r	170,236 ^r	179,870
Indium ^c do.	5,500	7,000 ^r	6,000 ^r	5,000 ^r	5,500
Iron and steel:					
Iron ore and concentrate:					
Gross weight thousand metric tons	6,439	6,810	7,138	7,614	7,823
Fe content do.	4,315	4,565	4,939 ^r	5,186 ^r	5,244
Metal:					
Pig iron ^c do.	330	330	330	330	330
Sponge iron ^c do.	80	80	80	80	80
Ferrosilicon ^c	600	600	600	600	600
Steel:					
Crude ^c	750,000	750,000	750,000	750,000	750,000
Ingots and castings ^c thousand metric tons	510	510	510	510	510
Semimanufactures ^c	250	250	250	250	250
Lead:					
Mine output, Pb content	306,211	319,368	313,332	329,165 ^r	345,109
Metal	118,970	122,079	120,311	116,774	114,259
Manganese, mine output, Mn content ^c	200	200	200	200	200
Molybdenum, mine output, Mo content	14,246	17,325	17,209	16,787	16,721
Selenium, metal, refined kilograms	75,660	69,820	75,390	60,000 ^r	60,000
Silver:					
Mine output, Ag content	3,060	3,206	3,471	3,501 ^r	3,686
Metal, refined	1,250	1,227	1,296	1,203	1,190
Tellurium, metal kilograms	25,000 ^r	32,880	37,000 ^r	35,000 ^r	28,000
Tin:					
Mine output, Sn content	41,613	42,145	38,470	39,019	39,037
Metal ⁵	40,624	36,733	40,495	36,004	38,865
Zinc:					
Mine output, Zn content	1,209,006	1,201,671	1,203,364 ^r	1,444,381 ^r	1,602,597
Metal	195,692	163,603	175,250	162,375	190,324

See footnotes at end of table.

TABLE 1—Continued
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2004	2005	2006	2007	2008 ^p
INDUSTRIAL MINERALS					
Barite	3,606	17,300 ^r	23,800 ^r	27,369	42,660
Boron materials, crude (borates)	9,578	120,000 ^r	190,800 ^r	233,991	349,891
Cement, hydraulic	4,590	4,600	5,782 ^r	6,208 ^r	6,862 ³
Chalk ^c	101,000	101,000	201,000 ^r	334,688	495,717
Clays:					
Bentonite	18,471	18,500	19,000	21,451 ³	31,557 ³
Fire clay	5,900	5,900	6,000	6,000	6,000
Kaolin	2,720	2,700	5,750 ^r	7,532 ³	13,215 ³
Common clay	438,976	440,000	439,000	334,688 ³	533,038 ³
Diatomite ^c	35,100	35,100	35,100	21,603	12,206
Feldspar	6,005	6,000	6,010	15,450	13,063
Gypsum, crude	149,735	150,000	151,000	334,688	334,688
Lime	205,100	215,400	215,500	215,500	215,500
Limestone	6,322	6,637	7,737 ^r	9,581	9,902
Nitrogen, N content of ammonia ^e	5,000	5,000	5,000	5,000	5,000
Phosphate rock:					
Crude, gross weight	37,760 ³	37,800	38,000	38,000	38,000
P ₂ O ₅ content	13,870	14,000	17,075	17,075	17,075
Salt, all types	248,898	250,000	922,000	1,185,273	1,276,271
Stone, sand and gravel:					
Stone: ^c					
Dolomite	645	645	645	645	645
Flagstone	300,000	300,000	300,000	300,000	300,000
Granite	2,000	2,000	2,000	2,000	2,000
Limestone	5,706 ^r	7,335 ^r	10,309 ^r	9,598 ^r	10,223 ³
Marble	22,208 ^r	72,510 ^r	8,841 ^r	24,513 ³	595 ³
Onyx	150	150	150	150	150
Quartz and quartzite (crushed)	40,000	40,000	40,000	40,000	123,542 ³
Shell, marl	4,000	4,000	4,000	4,000	6,210
Slate	11,950 ^r	21,496 ^r	30,097 ^r	10,844 ^r	42,437
Travertine	113,041 ^r	169,014 ^r	122,298 ^r	208,024 ^r	231,841 ³
Sand and gravel:					
Stone (construction)	1,455 ^r	2,928 ^r	3,466 ^r	2,580 ^r	3,154 ³
Sand	1,628 ^r	1,068 ^r	2,254 ^r	2,246 ^r	2,802 ³
Sulfur, elemental:					
Native ^c	100	100	100	100	100
Byproduct of metallurgy	204,000 ^c	204,000 ^c	204,000	204,000	204,000
Sulfuric acid, gross weight	623,000	623,000	623,000	623,000	623,000
Talc and related materials:					
Talc	9,548	9,500	9,550	9,171 ³	17,984 ³
Pyrophyllite	14,282	14,300	14,500	13,925 ³	14,733 ³
Total	23,830	23,800	24,050	23,096 ³	32,717 ³
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite, run-of-mine	8,876	8,837	26,717	227,088 ³	59,920 ³
Bituminous, run-of-mine	13,475	13,415	2,818	52,050 ³	76,515 ³
Total	22,351	22,252	29,535	279,138 ³	136,435 ³
Coke, all types ^c	10,000	10,000	10,000	10,000	10,000
Natural gas:					
Gross	860	1,517	1,775	2,676	3,100
Marketed	520	857	1,003	1,512	1,750
Natural gas liquids	5,205 ^r	13,082 ^r	13,873 ^r	13,417 ^r	12,236 ³

See footnotes at end of table.

TABLE 1—Continued
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2004	2005	2006	2007	2008 ^p	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude	thousand 42-gallon barrels	29,243	27,641	28,314	28,146	28,027
Refinery products:						
Liquefied petroleum gas	do.	2,938	2,978	2,286	2,363 ^r	2,468
Gasoline, motor	do.	8,848	8,968	12,777	13,948 ^r	13,355
Jet fuel	do.	3,822	3,874	3,722	4,144 ^r	4,416
Kerosene	do.	2,467	2,501	960	818 ^r	598
Distillate fuel oil	do.	15,082	15,287	17,598	19,018 ^r	19,519
Lubricants	do.	266	271	423	406 ^r	326
Residual fuel oil	do.	20,462	20,740	14,713	14,669 ^r	13,874
Asphalt	do.	1,011	1,025	838	930 ^r	1,113
Other ⁶	do.	8,629	8,746	6,988	6,701 ^r	7,532
Total	do.	63,525	64,390	60,305	62,997 ^r	63,201

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^pPreliminary. ^rRevised. do. Ditto.

¹Table includes data available through December 31, 2009.

²Output reported by Doe Run Resources Corp.

³Reported figure. Source: Ministerio de Energía y Minas del Perú.

⁴Peru's placer gold production was reported.

⁵Output reported by Minsur S.A.'s smelter.

⁶Includes refinery fuel and losses.

TABLE 2
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Antimony	metric tons	Doe Run Resources Corp. (private, 100%)	Smelter at La Oroya, Junin Department	700
Barite		Barmine S.A. (private, 100%)	Santa Cruz de Cocachacra, Huarochiri, Lima Department	NA
Bentonite		Minerales Andinos S.A. (NL Industries Co., 90%)	Vichayal Mine, Piura Department	9
Bismuth	metric tons	Doe Run Resources Corp. (private, 100%)	Refinery at La Oroya, Junin Department	1,000
Cement		Cementos Lima S.A. (private, 100%)	Atocongo Plant, Lima Department	3,500
Do.		Cementos Pacasmayo S.A.A. (private, 100%)	Pacasmayo Plant, La Libertad Department	1,000
Do.		Cemento Andino S.A. (private, 100%)	East Lima Plant, Lima Department	800
Do.		Cementos Yura S.A. (private, 100%)	Yura Plant, Arequipa Department	300
Do.		Cementos Sur S.A. (private, 100%)	Arequipa Plant, Arequipa Department	200
Copper		Southern Copper Corp. (SPCC) (Grupo Mexico, S.A. de C.V., 54.2%; Marmon Corp., 14.2%; Phelps Dodge Overseas Capital Corp., 14%; others, 17.6%)	Cuajone Mine, Moquegua Department	200
Do.	do.	do.	Toquepala Mine, Tacna Department	170
Do.	do.	do.	Cocotea, Simarrona, and Totoral Mines—electrowon, Tacna Department	60
Do.	do.	do.	Smelter at Ilo, Moquegua Department	320
Do.	do.	do.	Refinery at Ilo, Moquegua Department	300
Do.		Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc., 33.75%; Xstrata Copper, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Department	350
Do.	do.	do.	Antamina concentrator, Ancash Department	1,500
Do.		Doe Run Peru S.R. Ltda. (private, 100%)	Cobriza, Huancavelica Department	70
Do.	do.	do.	Smelter at La Oroya, Junin Department	65
Do.	do.	do.	Refinery at La Oroya, Junin Department	60
Do.		Compañía Minera Atacocha S.A. (private, 100%)	Yanacancha Mine, Junin Department	30
Do.		Compañía Minera Condestable S.A. (private, 100%)	Condestable Mine, Junin Department	20
Do.		Glencore International AG (private, 100%)	Casapalca, Lima Department	60
Do.		Volcan Compañía Minera S.A.A. (private, 100%)	San Cristobal, Mahr Tunnel, and Andaychagua, Junin Department	60
Do.		Cía. Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	60
Do.		Xstrata Tintaya S.A. (Xstrata plc, 100%)	Tintaya Mine, Cusco Department	120
Do.		Sociedad Minera Cerro Verde S.A.A. (Freeport-McMoRan Copper and Gold Inc., 53.6%; Sumitomo Corp. and Sumitomo Metal Mining Co. Ltd., 21%; Compañía de Minas Buenaventura S.A.A., 18.5%; others, 6.9%)	Cerro Verde, Arequipa Department	270
Do.	do.	do.	Electrowon at Cerro Verde, Arequipa Department	90
Dolomite		Minera Baribent S.A. (private, 100%)	Esperanza, Ancash Department	25
Gold	kilograms	Minera Yanacocha S.R.L. (Newmont Mining Corp., 51.35%; Compañía de Minas Buenaventura S.A.A., 43.65%; The World Bank's International Finance Corporation, 5%)	Yanacocha, La Quinua, and Maqui-Maqui Mines, Cajamarca Department	110,000
Do.	do.	Minera Barrick Misquichilca S.A. (Barrick Gold Corp., private, 100%)	Pierina, Cajamarca Department	40,000
Do.	do.	Compañía Minera Poderosa S.A. (private, 100%)	Poderosa, La Libertad Department	2,000
Do.	do.	Compañía de Minas Buenaventura S.A.A. (private, 100%)	Orcopampa, Arequipa Department	5,000
Do.	do.	Minas Arirahua S.A. (private, 100%)	Arirahua, La Libertad Department	2,000
Do.	do.	Asesoría Contable Minera S.A. (private, 100%)	Ocoña, Santa Clarita, Explorator, and Molino de Oro, Arequipa Department	1,000
Do.	do.	Cía. Aurífera Río Inambari S.A. (Cía. Minera del Sur S.A., 84%, and Aurífera Claudia, 16%)	Río Caichive, Madre de Dios Department	200

See footnote at end of table.

TABLE 2—Continued
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold—Continued	kilograms	Minera Aurífera Retamas S.A. (private, 100%)	Retamas, La Libertad Department	5,500
Do.	do.	Consorcio Minero Horizonte S.A. (private, 100%)	Parcoy, La Libertad Department	4,000
Do.	do.	Compañía Minera Sipán S.A.C. (private, 100%)	Sipán, Inca, La Libertad Department	4,800
Do.	do.	Compañía Minera Ares S.A.C. (private, 100%)	Ares, La Libertad Department	6,500
Do.	do.	Cía. Minera Aurífera Santa Rosa S.A. (private, 100%)	Santa Rosa, Puno Department	5,000
Do.	do.	Aruntani S.A.C (private, 100%)	Florencia and Santa Rosa Mines, Moquegua Department	6,500
Iron ore		Shougang Hierro Perú S.A. (Shougang Corp., 100%)	Marcona, Ica Department	13,000
Lead		Doe Run Peru S.R. Ltda. (private, 100%)	Smelter at La Oroya, Junin Department	150
Do.	do.		Refinery at La Oroya, Junin Department	125
Do.		Empresa Minera Los Quenuales S.A.	Izcaycruz, Lima Department	10
Do.	do.		Yauliyacu, Lima Department	15
Do.		Volcan Compañía Minera S.A.A. (private, 100%)	San Cristobal, Mahr Tunnel, and Andaychagua, Junin Department	70
Do.	do.		Paragsha, Cerro de Pasco Department	85
Do.		Compañía Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	5
Do.		Compañía Minera Atacocha S.A. (private, 100%)	Yanacancha Mine, Junin Department	40
Do.		Compañía Minera Milpo S.A. (private, 100%)	El Porvenir Mine, Cerro de Pasco Department	25
Do.		Compañía Minera Santa Luisa S.A. (private, 100%)	Huanzala Mine, Junin Department	40
Do.		Sociedad Minera El Brocal S.A.A. (private, 100%)	Colquijirca Mines, Cerro de Pasco Department	30
Do.		Corp. Minera Nor Perú S.A. (Pan American Silver Corp., 100%)	Quiruvilca, La Libertad Department	10
Molybdenum		Southern Copper Corp. (SPCC) (Grupo Mexico, S.A. de C.V., 54.2%; Marmon Corp., 14.2%; Phelps Dodge Overseas Capital Corp., 14%; others, 17.6%)	Cuajone, Moquegua Department and Toquepala, Tacna Department	NA
Do.		Sociedad Minera Cerro Verde S.A.A. (Freeport-McMoRan Copper and Gold Inc., 53.6%; Sumitomo Corp. and Sumitomo Metal Mining Co. Ltd., 21%; Compañía de Minas Buenaventura S.A.A., 18.5%; others, 6.9%)	Cerro Verde, Arequipa Department	2
Natural gas	million cubic meters per day	Pluspetrol Perú Corp. S.A. (Pluspetrol S.A., 36%; Hunt Oil Co., 36%; SK Corp., 18%; Tecpetrol del Perú S.A.C., 10%)	Camisea gas deposit, Cusco Department	NA
Do.	do.	Petrotech del Perú S.A. [Petróleos del Perú S.A. (PETROPERU), 100%]	Pucallpa, Loreto Department	120
Do.	do.	Aguaytia S.A. [Petróleos del Perú S.A. (PETROPERU), 100%]	Aguaytia gas deposit, Ucayali Department	80
Do.	do.	Pluspetrol S.A. (private, 100%)	Pucallpa, Loreto Department	60
Petroleum, crude	42-gallon barrels per day	Petrotech del Perú S.A. (Perúpetro S.A., 100%)	Onshore Piura Department; northeast and central jungle areas, Loreto Department	68,000
Do.	do.	Petróleo Brasileiro S.A. (Perúpetro S.A., 100%)	Pacific Coast, offshore Piura Department	30,000
Do.	do.	Pluspetrol S.A. (private, 100%)	Northeastern jungle, Loreto Department	90,000
Do.	do.	Occidental Petroleum Corp. (private, 100%)	Block 1-AB, northern jungle, Loreto Department	28,000
Petroleum products	do.	Refinería La Pampilla S.A. (RELAPASA)	Refinery La Pampilla, Lima Department	110,000
Do.	do.	Petróleos del Perú S.A. (PETROPERU), 100%	Refineries Talara, Piura Department	62,000
Do.	do.	do.	Refinery Conchan, Lima Department	15,500
Do.	do.	do.	Refinery Iquitos, Loreto Department	10,500
Do.	do.	do.	Refinery Pucallpa Ucayali Department	3,300
Do.	do.	do.	Refinery El Milagro, Amazonas Department	1,700
Do.	do.	Pluspetrol Norte S.A.	Refinery Shiviyacu, Loreto Department	5,200
Phosphate rock	metric tons	Empresa Minera Regional Grau Bayóvar S.A. (Vale S.A., 100%)	Bayovar phosphate mine, Piura Department	50

See footnote at end of table.

TABLE 2—Continued
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Silica sand		Minera Baribent S.A. (private, 100%)	Maria & Martin Mines, Junin Department	27
Silver	kilograms	Empresa Minera Los Quenuales S.A.	Yauliyacu, Lima Department	150,000
Do.	do.	do.	Izcaycruz, Lima Department	20,000
Do.	do.	Doe Run Peru S.R. Ltda. (private, 100%)	Refinery at La Oroya	1,100,000
Do.	do.	Co. Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	46,500
Do.	do.	Compañía de Minas Buenaventura S.A.A. (private, 83%, and Centromin Perú S.A., 17%)	Julcani and Huachocolpa Mines, Huancavelica Department, and Uchucchacua Mine, Lima Department	350,000
Do.	do.	Compañía de Minas Buenaventura S.A.A. (private, 100%)	Orcopampa Mine, Arequipa Department	161,000
Do.	do.	Volcan Compañía Minera S.A.A. (private, 100%)	San Cristobal, Mahr Tunnel, and Andaychagua, Junin Department	350,000
Do.	do.	Sociedad Minera Corona S.A. (private, 100%)	Hualgayoc, Cajamarca Department	175,000
Do.	do.	Compañía Minas Arcata S.A. (private, 100%)	Arcata, Arequipa Department	170,000
Do.	do.	Southern Copper Corp. (SPCC) (Grupo Mexico, S.A. de C.V., 54.2%; Marmon Corp., 14.2%; Phelps Dodge Overseas Capital Corp., 14%; others, 17.6%)	Ilo smelting and refining, Moquegua Department	150,000
Do.	do.	Compañía Minera Santa Luisa S.A. (private, 100%)	Huanzala Mine, Junin Department	53,000
Do.	do.	Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc., 33.75%; Noranda Inc., 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Department	340,000
Do.	do.	Aruntani S.A.C (private, 100%)	Florencia and Santa Rosa Mines, Moquegua Department	14,500
Do.	do.	Compañía Minera Raura S.A. (private, 100%)	Raura, Lima Department	54,000
Do.	do.	Compañía Minera Milpo S.A. (private, 100%)	Yanacancha, Cerro de Pasco Department	110,000
Do.	do.	Compañía Minera Atacocha S.A. (private, 100%)	Yanacancha Mine, Junin Department	130,000
Do.	do.	Sociedad Minera El Brocal S.A.A. (private, 100%)	San Gregorio Mine, Cerro de Pasco Department	110,000
Do.	do.	Corp. Minera Nor Perú S.A. (Pan American Silver Corp., 100%)	Quiruvilca, La Libertad Department	125,000
Steel		Sider Corp. S.A. (Acerco S.A., 49.4%; Grupo Wiese, 49.4%; others, 1.2%)	Chimbote, Ancash Department	550
Do.		Empresa Laminadora del Pacífico S.A. (Acero Arequipa S.A., 100%)	Pisco, Ica Department	180
Tellurium	metric tons	Doe Run Peru S.R. Ltda. (private, 100%)	Refinery at La Oroya	12
Tin	do.	Minsur S.A. (private 100%)	San Rafael Mine and plant, Puno Department	50,000
Do.	do.	do.	Pisco smelting and refining, Ica Department	45,000
Tungsten	do.	Minera Regina S.A. (private, 100%)	Palca XI, Puno Department	1,400
Do.	do.	Fermin Málaga Santolalla S.A. (private, 100%)	Pasto Bueno, Ancash Department	1,000
Zinc		Volcan Compañía Minera S.A.A. (private, 100%)	Cerro de Pasco, Cerro de Pasco Department; San Cristobal, Mahr Tunnel, and Andaychagua, Junin Department	320
Do.		Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc., 33.75%; Xstrata Copper, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Department	325
Do.		do.	Antamina concentrator, Ancash Department	1,500
Do.		Empresa Minera Los Quenuales S.A.	Pachangara, Lima Department	200
Do.		do.	Izcaycruz, Lima Department	40
Do.		Compañía Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	80
Do.		do.	San Vicente Mine, Junin Department	70
Do.		Doe Run Peru S.R. Ltda. (private, 100%)	Refinery at La Oroya	70

See footnote at end of table.

TABLE 2—Continued
 PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Zinc—Continued	Sociedad Minera Refinería de Zinc Cajamarquilla S.A. (Grupo Votorantim Metais S.A., 99%, and employees, 1%)	Refinery at Cajamarquilla, Lima Department	130
Do.	Compañía Minera Atacocha S.A. (private, 100%)	Yanacancha Mine, Junin Department	60
Do.	Compañía Minera Raura S.A. (private, 100%)	Raura, Lima Department	45
Do.	Corp. Minera Nor Perú S.A. (Pan American Silver Corp., 100%)	Quiruvilca, La Libertad Department	25
Do.	Compañía Minera Santa Luisa S.A. (private, 100%)	Huanzala Mine, Junin Department	50
Do.	Compañía Minera Milpo S.A. (private, 100%)	Yanacancha, Cerro de Pasco Department	80
Do.	Sociedad Minera El Brocal S.A.A. (private, 100%)	Colquijirca Mines, Cerro de Pasco Department	60
Do.	Empresa Administradora Chungar S.A.C. (private, 100%)	Animon Mine, Cerro de Pasco Department	60

Do., do. Ditto. NA Not available.

TABLE 3
PERU: RESERVES OF MAJOR MINERALS IN 2008¹

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Coal, all types	1,100,000
Copper	75,200
Gold	metric tons 3,000 ²
Iron ore	882,000
Lead	6,000
Molybdenum	450 ^e
Natural gas	billion cubic meters 335
Natural gas liquids	million barrels 682
Petroleum crude	do. 416
Phosphate rock	820
Salt	100,000 ^e
Silver	metric tons 43,800
Sulfur	150,000 ^e
Tin	400
Uranium	100 ³
Zinc	21,000

^eEstimated; estimated data are rounded to no more than three significant digits; the amounts are proven reserves.

¹Sources: 2008 and 2009 "Anuario de la Minería del Perú" Ministerio de Energía y Min except for natural gas and petroleum crude; U.S. Geological Survey Mineral Commodity Summaries 2009; U.S. Energy Information Administration, 2009; Perúpetro S.A., 2009.

²Excludes metal in placer deposits.

³Recoverable at prices of \$100 or less per kilogram of uranium.